THE HIGH SCHOOL JOURNAL

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GUIDANCE AND THE NEW CURRICULUM

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GUIDANCE, as here discussed, is the direction of the educational experiences and the promotion of growth of the high school student toward appropriate social, occupational, and personality adjustments. This concept of guidance contemplates at the outset an individual who is undergoing a program of experience and directions through the teacher's interpretation and use of the curriculum materials to promote growth in him. The outcomes of this program are expected to meet social approval and promote economic and personal adjustments in various life situations. The effectiveness of such a program is immediately and ultimately affected by the capabilities and the interests of the pupil and by the type of experiences or learning exercises that he is required to undergo.

Under the old curriculum and teaching procedures definite bodies of subject matter have been prescribed and most of the teaching has consisted of having the students assimilate the substance of this material to the point of satisfactorily answering the teacher's questions in class or on examinations. The concern of the school has been what the student has been doing to the subject matter and not what the subject matter has been doing to him. Until recently, erudition has been the concept of the end of an education, but we have become conscious of another important consideration in education—the individual pupil.

"The tardiness of organized education," says Trabue,* "in studying the individual student and the character of his present environment is due in large part to the fact that the school itself took form in an earlier age when society and the individual were thought of as

* *Educational Outlook*, Vol. VII, No. 4, pp. 218-223.

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relatively simple and permanent in character. Little doubt existed in the mind of the teacher regarding either the nature of the child or the nature of the world for which he must be prepared. In the absence of doubt concerning these matters, the school developed forms and traditions that provided for little attention to them.

"School practices established centuries ago have changed very slowly, and the point of view of the early schools remains almost unchanged in many quarters. . . . It is not surprising, therefore, to find that little attention has been given until recently to careful studies of the individual pupil and of the social environment in which he must become adjusted.

"The modern world, in contrast to the world in which the school took form, is changing rapidly in the demands it makes upon its citizens. . . . Those who remain at work are performing simpler tasks, doing the same operations over and over again with little or no use of their intellectual powers, working fewer hours, feeling less and less the joy of creative workmanship, and having more and more leisure in which they have no definite program of activities to occupy their minds and hands. . . ."

Under the instructional program contemplated in the new curriculum formal scholastic practices and fixed factual outcomes will be replaced by types of subject matter organization, learning exercises and teacher directions that promote growth toward conceived outcomes. The measure of success will not be the amount of the text covered nor the thoroughness with which it is done but the amount of growth in the pupil. We now realize that there are occupational and personality patterns and patterns of education and experience that are determiners of success or failure in various social and occupational environments. It has become the concern of the school to know more and more about the groups of traits conducive to good adjustments and guiding the development of the student into desirable adjustment patterns. When we shift our interests from fixed bodies of subject matter to pupil growth and understanding, we greatly enlarge the responsibility of the school for intelligently directing that growth. We are at once confronted by the problems of diagnosis, remedial teaching, and measurement of growth in the desired functions. This leads at once to two major problems of guidance. First, the program of guidance for students whose program of training will terminate with or before high school graduation; and, second, the program of guidance for students whose program of education will continue beyond the high school.

Guidance surveys and research are very essential in the inauguration of a program of guidance. Such a survey should include as complete information as possible of the potential personal factors, the degree of development of the individual, and the social, economic, and personal adjustments most likely to be required in the future. To illustrate, a pupil with good intelligence, good social background, and other favorable factors, who has considerable literary and cultural ability may be a failure in medicine, engineering, chemistry, or other technical occupations. It is not my purpose to insist that there are mathematical, scientific, literary, or specialized types of minds or intellects, except those that are the result of temperament, education, and interests. There are very great differences in the knowledges, habits, skills, attitudes, and personality patterns required for success in the various professional, industrial, and technical pursuits.

Emphasis upon subject matter for its own sake, for the sake of being erudite merely, is being abandoned, and emphasis in the new curriculum is upon the progressive development of actions, attitudes, habits, skills, and other factors essential to succesful adjustment in the world today and ability to adapt to a changing world of tomorrow. Emphasis upon defining or projecting problems of genuine worth to the student has replaced emphasis upon the fixed textbook as the core of the curriculum. The pupil plans his attack upon the problem, learns to locate, assimilate, and use information bearing upon it. He works through to an end in coöperation with others and with them views and judges the results, and he uses them if they are satisfactory. When they are unsatisfactory, he plans his attack again and works toward another solution.

When this type of instructional program is contrasted with one in which the teacher had assigned twelve pages of history of literature upon which fifty-one factual questions were asked in a sixty-minute period, or a similar one in which the teacher asked forty-three factual questions in forty-five minutes on eight pages of biology, it is easy to see the greater demand for guidance. In the factual question and answer procedure it is safe to assert that ninety-five per cent of the teaching requires only one type of learning—rote learning. In the new procedures initiative replaces passive assimilation; coöperation replaces individual memorizing; thinking and generalizing replace fixed associations, and insight becomes more important than the teacher's assigned questions.

I have been concerned with the giving or scoring or interpreting

of the scores of more than 100,000 high school seniors. They vary in reading ability from first grade reading rate and comprehension to the rate and comprehension of the average graduate student. Under the old question-answer procedure it matters little with most teachers whether the student reads 100 or 300 words per minute, and it matters little whether he reads with fifth grade or graduate ability in comprehension, so long as the students can give the material back in response to their questions. Frequently the student who is considered dumb or lazy is neither dumb nor lazy but unable to read or study intelligently because he has never been taught to read or study well.

One of the major difficulties that has confronted the high school guidance group has been the prescriptions of accrediting agencies. Though research has shown that college entrance examinations and unit requirements for college entrance are the two most unreliable methods of predicting success, the colleges have so far failed to abandon these traditions in favor of a more reliable scheme. The smaller high school with one course of study has had to require this prescribed layout, though it fitted the students for nothing in life and nothing in college.

The second major difficulty lies in the methods of student recruiting employed by the colleges. No amount of guidance can overcome such practices, and until high school associations definitely stop recruiting of the contemporaneous type, misfits in the college will continue to be found in large numbers, and the college will continue to charge the failures to the high schools from which they come. It is time for the colleges to begin to study and prescribe abilities to do and pursue certain lines of work, and employ scientific procedures for determining the abilities and dispositions to do study and work as the basis for college selection. The college should assume responsibility for selecting the misfits in its student body.

As has been suggested the new curriculum is composed of type studies, problems, projects and other activities. In it students study, evaluate, and do. It is the diagnosis, measurement, and direction of these activities and their influence upon the development of the necessary knowledges, habits, skills, and attitudes for doing the things one wishes to do in life that constitute the guidance program of the new curriculum. Guidance is no longer thought of as categorically classifying and stationing people. It is not a fixing process, but a process of bringing out and initiating effort and directing it to worthy ends. Rather than viewing it as a means of directing a

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FUNCTIONS OF SECONDARY EDUCATION DIVISIONS OF STATE DEPARTMENTS OF EDUCATION

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THIS STUDY concerns the functions that are performed by the employees of the divisions of secondary education of State Departments of Education. A master checklist of duties was prepared and sent to the chief state school official in each of the forty-eight states with the request that it be handed to the head of the secondary school division for checking. The directions on the checklist asked the head of the division to check the functions that were performed by his division and to add any functions that were performed which were not included on the checklist. Thirty-six of the chief state school officials either returned the checklists filled in or reported that no such division existed in the State Department of his state. Of the thirty-six replies thirty, or 83.3 per cent, of the State Departments included secondary school divisions in their organization. The checklist also asked for certain information concerning the titles, tenure, and salaries of the employees in the divisions.

The functions that were performed by the thirty divisions in the thirty-six states reporting are shown in the following distribution.

FUNCTIONS	*No. of Divisions in which functions were performed*
Address groups of teachers and trustees on educational problems	30
Inspect high schools	29
Supervise high schools	29
Advise with local authorities concerning daily program, course of study, and school building	29
Investigate local systems to help boards of education solve local problems	29
Correspond with schools and individuals within and without the state	29
Coöperate with other divisions related to secondary education	29
Coöperate with department in issuing departmental bulletin	29
Take care of all correspondence	28
Attend conferences of teachers of special subjects	28
Collect and evaluate statistical data	27
Check reports of preliminary organization and advise of irregularities	26
Set up minimum requirements for science laboratories	26
Make recommendations for accreditment of high schools which meet standards	26
File a detailed report of each visit to any school	25

Work out state courses of study in various subjects..... 25
Issue divisional bulletins and manual..... 25
Advise principal to make preliminary report of his organization..... 24
Secure annual reports from accrediting agencies..... 24
Determine and make official record of curricula on public and private high schools within accrediting associations..... 23
Prepare a list of books for high school libraries..... 23
Serve as active member of survey committees of the state..... 22
Prepare and edit monographs relative to content and methods of teaching of the special subjects..... 22
Check training of all high school teachers against standards of accrediting commission..... 21
Act as executive officer of state high school accrediting commision..... 20
Direct district high school conference..... 20
Visit each school at least once a year..... 18
Direct the annual state high school conference..... 18
Set up minimum requirements for manual training workshops..... 17
Serve as chairman on state committee on member high school of regional accrediting agency..... 13
Plan and put into operation a high school program for each county..... 11
Evaluate and validate all certificates of pupils' work arising from the transfer of pupils from school to school or from state to state..... 10
Evaluate all credits for junior and senior pupils planning to graduate in a given year..... 7
Serve as member of executive committee of the state high school association..... 6
Take up and distribute all high school funds..... 5
Issue all diplomas and certificates to pupils satisfying graduation requirements..... 4
Speak at service clubs, Grange, etc..... 1
Serve on varieties of committee work, such as character education, new accredition schemes, etc..... 1
Prepare the state budget for the general assembly..... 1
Draft bills that the department wishes considered..... 1
Keep in contact with the general assembly and see that the bills get the proper consideration..... 1
Maintain a teacher placement list..... 1
Coördinate and coöperate with other divisions in the department of education..... 1
Serve as member of board of certification of superintendents..... 1
Revise examination papers for admission to state teachers college and schools of art..... 1
Hold high school equivalency examinations..... 1
Assist in selection of tests, maps, etc..... 1
Administer state school relief..... 1
Prepare college entrance examination questions..... 1
Grade college entrance examination papers..... 1
Counsel with teacher training institution in regard to the training of teachers..... 1

Counsel with state board of education in regard to the qualification teaching to high school and elementary school certificates	1
Counsel with textbook company in regard to books to be adopted for use in the schools	1
Hold examinations for certifying county superintendents	1

It will be observed from this distribution that there is universal agreement among the secondary school divisions on only one function. However, there are seven other functions performed in twenty-nine of the thirty divisions. Fifty per cent of the divisions perform twenty-nine of the functions which is a higher percentage of agreement than is found among most divisions of State Departments of Education. There are eighteen functions that are performed by one division each. The fact that eighty per cent of the secondary school divisions agree upon a relatively large number, nineteen, of functions indicates that the practice is more uniform and that the variance among the states is less than in most other divisions of State Departments. This may be accounted for by the fact that the field of secondary education is a much more recent public undertaking than is the field of elementary education and certain other divisions that are largely administrative in function.

The titles of the heads of secondary school divisions of State Departments do not seem to indicate the nature of their work in all cases. The most frequent title is that of *supervisor* which is followed closely by *director*. *Inspector* is the third ranking title and a *secretary* heads the divisions in four of the states. *Commissioner* and *agent* are found in one state each. From the list of functions that are given it seems that a title of supervisor would be the most logical one especially if the functions are concerned in the main with the instructional program rather than some administrative aspect of the organization.

Data were collected concerning the tenure of the heads of secondary school divisions of State Departments of Education from 1915 to 1933 inclusive. The average tenure during this period was 6.9 years and the median tenure was 6.0 years. The greatest number appointed during any one year was seven. These seven were appointed in 1933. The next greatest number, six, were appointed in 1929 while five were appointed in 1927 and 1930 each.

The salaries received by the heads of the secondary school divisions of State Departments of Education ranged from $1,200.00 to $5,000.00. The average salary was $3,037.00. In cases where the sal-

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THE SEA, A MINE

CARL DEAL
*Senior Class, Boyden High School, Salisbury, N. C.**

IN THE OLD DAYS, the day of '49, men were tempted by the gold in California, by dreams of riches. They moved in an almost endless train of covered wagons across the continent and in ships around Cape Horn; they moved toward gold and nothing in their way was great enough to stop them.

Some day, perhaps, when science discovers a practical method, they will travel toward the sea for the millions of dollars worth of gold the sea can offer them. There are about 300,000,000 cubic miles of water in the oceans of the world with gold in each cubic mile valued at $25,000,000. Is this not enough to lure men into another great migration? As a further startling fact, it was stated by Thomas Midgley, Jr. that, if all the gold of all the seas were obtained, every living human being in the world could be given $3,750,000 in gold!

Although no practical methods have been developed, there are two outstanding means by which gold may be mined from the sea.

One of these utilizes mercury. Mercury in fine particles is allowed to pass through water containing gold and silver, and with the precipitation of the mercury come the gold and silver. To this residue is added some lead. The mixture is placed in a furnace. The gold finally comes out of the furnace in very small quantities.

The other method uses a colloidal solution of sulfur to obtain the gold. When the sulfur precipitates, it takes the gold along with it. But we shall have to look to the future for the production of gold from the sea in a cheap enough process to make it worth while.

However, there is a very valuable substance which is now being extracted from sea water commercially. That substance is bromine —in its effect, a lesser form of gold.

For every 2,000 gallons of sea water used there can be extracted one pound of bromine which is used commercially in a great many different ways.

In 1924, 2,000,000 pounds of free and combined bromine were used, and in 1931, 9,000,000 pounds were used. This increase caused chemical engineers to seek and to find a practical method for obtaining this substance from sea water, which up until recent years was taken from natural brines.

* Prize-winning essay in the contest sponsored by the North Carolina Academy of Science, 1936.

The Ethyl Gas Corporation operated a small sea plant in 1924, using a method in which aniline was added to chlorinated sea water to form tribromoaniline.

$$3NaBr + 3Cl_2 + C_6H_5NH_2 \longrightarrow C_6H_2Br_3NH_2 + 3NaCl + 3HCl.$$

At approximately the same time the Dow Chemical Company was making experiments on the possibility of using the same method which they had been using for brines, with some alterations, for the extraction of bromine from sea water. Their fundamental process consisted of three steps:

1. Oxidizing a brine with chlorine to liberate bromine;
2. Liberating the bromine from the water with a blast of air;
3. Absorbing the bromine from the air with a carbonate solution from which the bromine was recovered in a commercially useful state.

The process in use by this company, however, eliminated as waste, water with approximately the same amount of bromine in it as there is in sea water; hence the process had to be improved.

Bromine could not be obtained from neutralized sea-water because too much bromine would combine with the water to form bromic and hydrobromic acids for the process to be practical.

$$3Br_2 + 3H_2O \longrightarrow HBrO_3 + 5HBr.$$

Therefore, it was necessary to form an acid solution before the chlorine was added to prevent the reaction shown above. The amount of acid was determined by careful research.

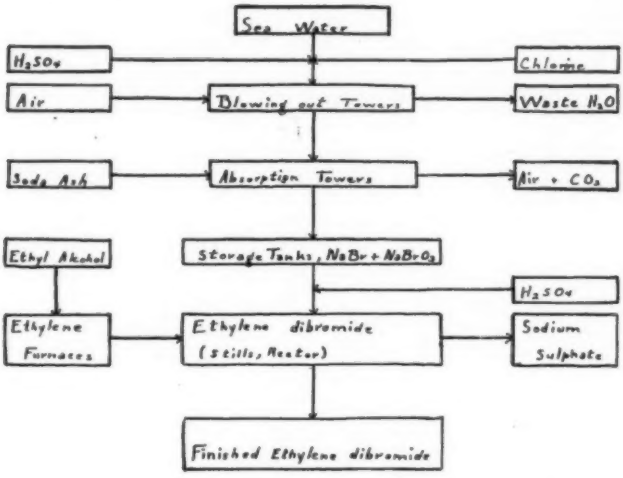
After difficulties in processes were ironed out, the problem of finding an ideal site for the proposed plant had to be solved. This problem of determining the site included several factors: first, the sea water should not be diluted by fresh water; second, the waste water should be disposed of without diluting the intake water; and, third, there should be little impurity caused by industrial waste in the water. Since all water entering the Atlantic flows southward, it was concluded that the plant would be located on the north shore of some river on the eastern coast, and that there should not be a river emptying into the sea for some distance northward.

The peninsula on the north side of the Cape Fear River of our state seemed ideal in all respects. Therefore, in 1931 a small plant was installed which operated for six months and furnished 500 pounds of bromine per day. The difficulties that the operators of this experimental plant overcame proved to be of vital importance when a larger plant was built.

A new plant designed for the production of 15,000 pounds of

bromine per day, which was to be converted into 16,000 pounds of ethylene dibromide per day, was proposed in July, 1933, and a new company incorporated, the Ethyl-Dow Chemical Company. The production of bromine began January 10, 1934.

The process of bromine production may be represented by the following diagram:



The intake now used at this plant is 200 feet long and 15 feet wide. It extends 30 feet into the water at low tide and is 9 feet deep. From the intake the water goes into a settling basin, 112 feet long, 76 feet wide, and 12 feet deep, on one end of which is a moving belt with screen buckets to remove floating objects such as sticks. Next to this two pumps with a total capacity of 58,000 gallons per minute pump water over a dam which prevents the water from flowing back into the ocean when the pumps are stopped. The water is then transported by a canal to the absorption and blowing-out towers.

A moving screen removes the trash that may have fallen into the canal before it goes to pumps which force it up to the top of the tower into rubber lined pipes.

From small rubber lined pipes on the sides of the larger ones sulfuric acid of ten per cent strength is introduced. Then from more of such pipes chlorine is introduced and the water is finally forced out 3,200 small nozzles.

Air is forced up through the falling water and the bromine is

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The History Column

Conducted by A. K. KING

RECENT PUBLICATIONS ON THE TEACHING OF THE SOCIAL STUDIES

DURING the past year a number of books on the teaching of the Social Sciences have appeared. Bining, Arthur C. and David H., *Teaching the Social Studies in Secondary Schools*,[1] brings the bibliography and theoretical discussion of most of the conventional topics in a social science methods course up to date. Stormzand, M. J. and Lewis, Robert H., in *New Methods in the Social Studies*,[2] disregard the conventional and focus attention on recent developments. Hampton, V. B., *Reorganizing the Social Studies*,[3] discusses the trend of the social sciences and the need for reorganization of the secondary school curriculum. *New Techniques in Social Science Teaching*[3] by the same author is an attempt to adapt the case book idea to social science teaching. Reports of the commission on the social studies of the American Historical Association are still appearing. Tryon, R. M., *The Social Sciences as School Subjects*,[4] is a historical study of the development of the course of study in the social sciences. Beale, H. K., will have a study in this series on *Freedom of Teaching in the New Schools*, and Horn, E., will have one dealing with *Methods of Instruction in the Social Sciences*. Both of these should be ready in the next few months. In addition to these new books, teachers will be interested in the magazine *Social Studies* which for the past two years has been carrying on the tradition of the *Historical Outlook*. At first it tried to direct its content away from methodology, but it met with competition from several other journals in the field of social dynamics which it attempted to invade. At present it is slowly returning to its former position as the professional journal of social science teachers.

It is significant that all the titles mentioned above deal with either "social sciences" or "social studies." There has not been a separate book on the teaching of history for several years. This is indicative of the trend of the curriculum since 1920. History has gradually given ground to such new subjects as civics, modern problems, economics,

[1] McGraw-Hill Book Company. 1935.
[2] Farrar and Rinehart. 1935.
[3] The John Willig Press. 1936.
[4] Charles Scribners' Sons. 1935.

and sociology. Perhaps we should change this department to "The Social Science Column."

The Social Science Section in "A Study in Curriculum Problems"

There are two general theories as to how a course of study should be built. It is held by some that this is a highly technical task requiring the coöperation of the so-called "best minds." This group believes that the average classroom teacher or administrator has neither the time nor the training for the research necessary in developing a course of study. On the other hand, there are educators who believe that making a course of study should be a democratic enterprise participated in by all the teachers and even many laymen. They hold that courses of study made by experts are likely to be either impracticable or stereotyped.

"A Study in Curriculum Problems of the North Carolina Public Schools"[1] is based on the last principle mentioned above. As such it reflects many of the weaknesses of democracy. In the social science section little unity of thinking as to basic objectives and conceptions is apparent. Many groups contributed to this section and each had its own "frame of reference," its own technique, and its own conception of methodology. For example, the geography committee was strongly committed to the idea of separation of subjects, even going so far as to recommend that one-sixth of the time in the first three grades be devoted to their specialty. The citizenship committee for the elementary grades strongly advocated integration. The history committee for this level seemed to be in favor of correlation. On the high school level the single subject approach was the basic conception by the time the committee had completed its work. Perhaps this diversity of opinion and approach was inevitable in a coöperative enterprise. If the work of the various committees had been altered too much the result would have been a course of study by experts.

As a matter of fact, this publication does not purport to be a course of study. It is intended primarily to present illustrations of different ways of organizing and teaching. As such it should stimulate thinking and lead to further experimentation. If viewed as a report on progress made toward revision it is not open to serious criticism. However, if it is accepted and used as a finished course of study it will probably lead to some confusion. It is to be hoped that this bulletin will be used as a reference by teachers rather than as a manual for daily procedure.

[1] Publication No. 189. State Superintendent of Public Instruction. Raleigh, N. C.

The French Column

Conducted by HUGO GIDUZ

AMONG the questions that have been sent in to the editor of this column are the following:

1. *What to do during the first recitation with a beginning class?*

If the recitation is a full period the teacher should spend a portion of it in getting acquainted with the pupils. She should make an effort to find out which of the members of the class are really interested in learning French, and which ones have in mind merely getting credit for a course. If possible she should attempt to discourage from the very start those who are not willing to work hard, for it is only through hard work that a knowledge of a foreign language can be acquired. It is better to discourage the loafers from the very start than to permit them to continue and be a drag on the class.

In addition the teacher may give the class a few common expressions on this first day. The pupils like to be able to use the new language. Their interest rises materially when they find that they can really use the language and feel that it means something to someone else. "Bon jour." "Comment allez-vous?" "Je vais bien." "Quel temps fait-il?" "Il fait beau." "Quel jour est-ce aujourd'hui?" "C'est aujourd'hui . . ." etc., are the type of expressions that they enjoy learning. The realization that French is a living language by means of which people can communicate adds interest.

The teacher might also spend a few minutes in discussing France and the French people. It is well to give the pupils a few references so that those who are really interested may look up some material for themselves. This should be voluntary work. Required work of this type kills the interest.

2. *How long should it take to teach the vowel triangle? How many vowels per day? What percentage of the class period time should be given to it each day? How long continued?*

Too often teachers have the mistaken notion that teaching phonetics is merely a matter of teaching symbols; getting the pupils to recognize signs; giving them a knowledge of how to write sentences in phonetics. In reality phonetics should be looked upon as merely

an aid to better pronunciation; the symbols by themselves are unimportant. In our high school classes we should not attempt to give the pupils a course in phonetics. The vowel sounds should be taught through the vowel triangle. This should not take too much of the class time. By the end of the second month the pupils should be able to pronounce the vowels reasonably well. This ability to pronounce the vowel sounds may be accomplished by rapid drill at the beginning of each period for not more than fifteen minutes.

Since there are 19 vowel sounds one might mathematically divide them and say that the first day we should take a certain number, the second day another group, etc. However, language processes are not learned by mathematical treatment. The teacher should feel that the pupils have learned to pronounce reasonably well one sound before going on to the next. Some days it might be possible to drill upon two or three sounds or possibly even more. Another day, and these days will be more frequent, one may find that the class will have much difficulty in understanding how to form even a single sound, and then one may have to spend more than one recitation on that sound.

The intensive drill as noted above may perhaps cease by the end of the second month, but at no time during the two years should the teacher lose sight of the value that may accrue through a brief and rapid drill upon the vowel sounds. Notice that it is the sounds and not the symbols that are to be drilled. The symbols are merely devices to help the pupil achieve a better pronunciation.

(More questions that have been received will be answered in future issues. Teachers are urged to send in questions to the editor of this column.)

GUIDANCE AND THE NEW CURRICULUM

(Continued from Page 190)

passively taking in process, it is a stirring, challenging, bringing out process.

If we can view youth vivaciously participating in a newer and richer social life, challenging the old order of things, discontent with the babblings of adults about politics and economics, war and peace, religion and crime, we can glimpse the tremendous storehouse of energy that needs direction. If we can glimpse youth reconstructing their social order, their economic system, their industrial plans, and other major activities, we can see the types of abilities needed.

Guidance, educational, vocational or other types, means successfully directing youth in these activities and for them.

The Science Column

Conducted by CARLETON E. PRESTON

A PROPOSED STATEMENT OF PRINCIPLES BASIC TO INSTRUCTION IN THE NATURAL SCIENCES

(The accompanying report was presented and discussed at the recent meeting of the Science Department of the N.E.A. at Portland, Oregon. It is reproduced here with the hope that such discussion may be continued locally. *Ed.*)

FOLLOWING is a tentative statement of principles basic to the teaching of natural science. The statement is in no sense a set of scientifically settled conclusions. Scientific data can be helpful in the formulation of general policy, but are not (for the present, at least) adequate to serve as a complete basis for a statement of policy. The following proposals represent the present judgment of the Committee as to what conditions should control the teaching of natural science. They are tentative; not final. But we believe that they represent a definite policy which may well be adopted by teachers of science until further thought and research can point the way toward revision and improvement.

1. For the purpose of formulating a teaching program, we accept the ideal of popular democracy, and of individual liberty and dignity consonant with it, as so significant, authentic, and valid a feature of our national tradition that it must become the fundamental setting within which all teaching procedures are conducted. (a)*
2. Since education implies growth in the direction of betterment, the problem of education is one of seeking to enhance the student's ability and will to participate intelligently in effecting progressive and continuous improvement, both for himself and of his material and social environment. (b)*
3. In a study which looks toward the future, a thorough knowledge of present and past is essential. The school curriculum should therefore represent *a study of the common culture or tradition, with a view to its progressive refinement.* (c)*
4. In order to determine what the study of science implies, a definition is demanded. There are two widely used definitions of the term: (a) science as organized and tested *knowledge*, and (b) science as *a method of obtaining* organized and tested knowledge.
   a. For the purpose of defining the area of subject matter with which we are principally concerned and within which problems are to be selected for study, we accept the definition of science as organized, tested, and

* These parenthesized letters refer to the Explanatory Notes that follow the main text.

dependable knowledge, and by further confining the study to *natural* science we limit the area for the most part to natural or material phenomena. (d)*

b. For the purpose, however, of determining proper teaching procedures, we must employ the definition of science as *a method* (or a group of related methods) *of arriving at* organized, tested, and dependable knowledge. Instruction in the sciences is thus primarily concerned with the *method* or *methods* of science, and uses the subject matter of science only as a means toward promoting growth in the method. In this sense the science-as-method definition is primary and the science-as-subject-matter definition secondary.

5. The study of science therefore becomes a consideration of the facts, interpretations, and techniques of science, but always with a view to their own refinement and to their use in the improvement of human living.
6. Since the class is to be conducted in accordance with democratic principles, the teacher is not justified, on the one hand, in adopting narrowly propagandic or autocratic means for bringing the student to the acceptance of any preordained set of attitudes, beliefs, or patterns of behavior. Nor is he justified, on the other, in adopting a "hands off" or *laissez faire* attitude. The teacher must guide without propagandizing; must educate without inculcating. Moreover, it is only by avoiding both extremes that the student may make progress in the development of beliefs scientifically formulated, and of the ability to formulate beliefs scientifically. (e)
7. In consequence of the foregoing, it becomes of primary importance that the student be brought to see *knowledge in the making*. His grasp of *knowledge as made* must therefore be not only in terms of the conclusions last reached by scientists, but must also encompass other conclusions which have received, or might have received, acceptance by thoughtful minds, together with the reasons why they are, or should be, rejected. In so far as possible, too, the limitations of the convincing nature of currently accepted interpretations or conclusions must be grasped. Only so can the student's thinking become realistic and scientific.
8. The problem technique of teaching thus becomes vital. The *problem-raising* technique is basically one of seeking points of vagueness, inadequacy, confusion, or conflict in the students' previously accepted concepts. The *problem-solving* technique is likewise one of gathering information and seeking interpretations which will tend to resolve such vaguenesses, inadequacies, confusions, or conflicts. Herein lies our major criterion for the selection and treatment of subject matter; a criterion which leads the student to agree, not with some authority as such, nor with no one (no attention being paid to his beliefs), but with himself; a criterion which is in keeping with the democratic conception and the scientific attitude. (f)
9. Several major implications are inherent in the foregoing criterion of subject matter selection and treatment, viz.:
   a. Real teaching usually gets under way only upon the arousal of issues which, so far as the student is concerned, are to a degree controversial. The teacher is entirely justified in presenting, from time to time, settled subject matters purely because the student wants to know, or as preparation for the opening of a problem. Scientific facts will also be

marshalled as data to assist in problem solving. But settled matters, studied for their own sake, do not usually challenge the student's mind sufficiently to promote real reflection, nor do they furnish a basis for the significant remaking of beliefs or behavior patterns.

b. It is highly important that students be genuinely interested in the topics chosen for study, and vitally concerned with the outcomes. Our thesis is that the foregoing program will do much toward making the experiences of students in science classes rich, vital, and realistic.

c. The general trend of the program is toward the development of a progressively more unified and more intelligent outlook on life, since, although each teaching unit starts with an unsettled issue, it moves through discussion, experimentation, and study toward the settlement of that issue. The problems chosen therefore progressively assume more and more of social significance since it is in that direction that current issues become most problematic and most urgently demand scientific data for their solution.

d. The "correct" or best solution to any problem is the one which goes furthest toward harmonizing the conflicting issues at stake. This means that the solution must be not only in harmony with the data, but also with solutions which have been or are being reached in connection with other problems and other fields of thought.

10. The task of aiding students to understand and be able to apply the major interpretative generalizations of science as they contribute to the improvement of living is an essential part of this program, though not an end in itself. This is likewise true of the amassing of scientific facts and data. Whatever may be the immediate objective or objectives or a unit, the unit should always be handled in such a manner as to enhance the *ability to get* information and *to arrive at* principles.

11. The effect of the foregoing program for science instruction is in the direction of stimulating and assisting the student toward becoming an independent learner, while he is at the same time being assisted toward the development of a widened, more appreciative, and more fully harmonized outlook on life, and a heightened competence in carrying on and helping to improve the affairs of life.

The above is respectfully submitted for the consideration of the Department of Science Instruction of the National Education Association by its Committee on Policy and Research.*

Signed,

WILBUR L. BEAUCHAMP,
RALPH C. BEDELL,
IRA C. DAVIS,
WARREN W. KNOX,
E. LAURENCE PALMER,
CARLETON E. PRESTON,
RALPH K. WATKINS,
ERNEST E. BAYLES, *Chairman.*

* Robert J. Havighurst assisted the Committee in an advisory capacity.

EXPLANATORY NOTES

(a) This does not mean that democracy is to be taught, or that propaganda is to be organized in its behalf. It merely means that since our national idealism is democratic in character the classroom must be handled in accordance with democratic principles.

(b) Betterment, improvement, or refinement are terms which must be defined in such a manner as to avoid propaganda in behalf of particular panaceas. We assume that improvement is to be achieved in the degree to which our culture becomes progressively widened in scope and more fully harmonized internally. Improvement lies in the direction of making our tradition richer and more true to itself; of effecting a greater degree of unanimity between the actual and the ideal. Section 8, 9c, 9d, and 11 elaborate this concept.

(c) The terms culture or tradition are here used in a generic sense. They include the whole of our individual and social inheritance. On the social side they include our common ideals, customs, institutions, and organizations; economic, political, social, etc. On the individual side they include our habits, attitudes, beliefs, acceptances, ideals, etc.
"Progressive refinement" is considered as involving (a) the retention of all that holds good and the elimination of all that has become outworn and outmoded, (b) making such additions as will best meet the needs of the new day, and (c) completely remaking the old whenever such steps are evidently necessary.

(d) However, we would hope that in the course of studying natural phenomena the implications of the interpretations reached would be carried beyond the bounds of natural science, thus seeking the widest possible basis for the harmonization of outlook indicated in sections 8, 9, and 11.

(e) Thus, for example, even though the democratic conception is basic to our teaching theory, the student is not to be forced to accept this or any other conception except through the demands of his own thinking and research. There are recurrent cases, of course, in which the teacher is obliged, in order to safeguard life and property or to preserve the integrity of the learning process, to use coercive measures in forcing noncoöperative pupils to act in accordance with individual and group welfare. But such cases are to be treated as exceptional. The police power is to be applied only if and when the pupil gives evidence of wilful refusal to abide by the dictates of intelligence, and is to be discontinued as soon thereafter as possible. We believe, moreover, that the program which we are here outlining will reduce the necessity for such coercive measures to the minimum.

(f) Traditionally, science courses have been defined almost entirely on the basis of content requirements. Our proposal is that far greater variability of content be employed in order to meet special local needs, but that whatever content is chosen, it should be taught with a view toward furthering the major objective, of growth in the ability to obtain knowledge and to arrive at interpretations. This will doubtless mean fewer units or topics covered in the course of a year and retarded speed in the study of the units or topics chosen. But such a policy will doubtless result in a more thorough understanding of principles and a wider knowledge of scientific facts, when viewed over a one-year, two-year, or longer period of time.

The Physical Education Column

Conducted by OLIVER K. CORNWELL

HEALTH EDUCATION and professional preparation of teacher-coaches of athletics, upon which the University of North Carolina embarked more definitely last year with the addition to its faculty of Oliver K. Cornwell as Professor of Physical Education, will be greatly strengthened with the addition of four new men to the Department of Physical Education this fall. Five men, all of them on the instructional pay roll, will compose the department, which also will have the service of the varsity and freshman coaches employed by the Athletic Association as well as the coöperation of other University departments.

Professor Cornwell heads the one-year old department. The new men are William F. Lange and Floyd Siewert, Assistant Professors; and Michael Z. Ronman and Herman Schnell, '30, instructors.

Professors Lange and Siewert are graduates of Wittenberg College in Ohio, from which Professor Cornwell came to the University last fall to organize the new department. Mr. Lange, who has been Director of Health and Physical Education at Muskingum College, New Concord, Ohio, for the past 13 years, was graduated at Wittenberg in 1921 and took his master's degree in physical education at Columbia University. He also was varsity coach of football and basketball. Mr. Siewert was graduated at Wittenberg in 1930 and holds the master's degree in physical education at Ohio State University. At Wittenberg he was trainer for all intercollegiate sports as well as assistant basketball coach. Mr. Lange, in addition to his duties in the physical education set-up at Chapel Hill, will also be assistant varsity football coach at Chapel Hill on the staff of Coach Wolf.

Instructors Ronman and Schnell also will have additional duties. Ronman will be varsity boxing coach, and Schnell will direct the intramural program. Coach Ronman is a graduate in physical education at Penn State, taking both his undergraduate work and graduate work there. Last year he was coach of Penn State's undefeated freshman boxing team. Mr. Schnell is a graduate of the University of North Carolina, class of 1930. He has continued at Chapel Hill in managerial capacities, and has headed the intramural program dur-

ing the past several years. He has been studying physical education work this summer at Columbia University.

The work of the Department of Physical Education at Chapel Hill is concerned with two projects: (1) physical education and personal hygiene instruction for all freshmen; and (2) the training of men who can assume teacher-coach positions in colleges and high schools. The latter work will center around nine university courses giving credit toward graduation. Personal Hygiene, Community Hygiene, and the teaching of Health and School Health Problems form a continuous unit through the school year. A second block of courses are Principles of Physical Education, Organization and Administration of Physical Education, and Tests and Measurements in Health and Physical Education. The third full-year program consists of Applied Anatomy, Physiology, and Individual Remedial and Corrective Physical Education. These courses are open to juniors and seniors and form a major in the Department of Physical Education. They are open to other students as elective courses. In addition course work is given in the coaching of football, basketball, baseball, track, boxing, wrestling, and tennis. These courses, conducted as laboratory work, are directed by the varsity coaches in these subjects and count toward credit on the A.B. degree in the College of Arts and Sciences. Last year 25 students were pursuing work with physical education as a major.

The work of the Department of Physical Education is concerned also with freshman instruction. In 1935-36 there were 20 sections of freshmen studying Personal Hygiene, taught by members of the physical education faculty assisted by members of the staff of the Athletic Association. The freshman course, required of all freshmen and a graduation prerequisite, consisted of one hour a week spent in classroom lecture work and three hours in physical education work during the whole year. At the opening of college a thorough medical examination is given every first-year student by the infirmary physicians, assisted by a staff of specialists. Freshmen are grouped into three classes, those with no physical deficiencies, those with physical deficiencies that may be corrected, and those with deficiencies of permanent character. The first group is taught physical education activities in the afternoon "labs." The second group is turned over to Dr. R. B. Lawson, Director of the Gymnasium, for corrective and remedial work, while the third group is given special work to suit their individual requirements. Emphasis is placed upon

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The Mathematics Column

Conducted by H. F. MUNCH

A CHALLENGE TO MATHEMATICS TEACHERS

WE ARE now at the beginning of another school year. Again we face our classes, the respective members of which have varying degrees of interest in mathematics. These pupils come from different home environments. They have had different experiences. They have different interests. They have different inherited tendencies, abilities and inclinations. They have, perhaps, decided to invest their lives in many different vocations and avocations. In short they are individuals no two of whom look alike, act alike, or respond alike to the same stimuli. We should not therefore be surprised that they do not all respond in the same way to us, to our teaching, or to our subject.

The challenge to us, then, is to take this heterogeneous mass of adolescents and to stimulate in them desirable aspirations, ideals, interests, and attitudes; to stimulate each of them to acquire knowledge, abilities, and powers; to develop those latent possibilities within each one into dynamic forces that will drive him to find his place in society and to use that place for the betterment of himself and of society as a whole.

This then is the challenge. It is one that will tax the ability of the greatest teacher. It may safely be asserted that no teacher ever has reached one hundred per cent efficiency in accomplishing this end. Yet there is the goal and every true teacher will exert himself to the utmost to attain it. All his ability, power, knowledge, personality, and skill should be centered on the attainment of this goal. No opportunity should be lost to visit a house in order to better understand why a pupil reacts as he does. No opportunity should be lost to secure the interest of a pupil not only in the work you teach but in any worthwhile activity. No opportunity should be lost to visit with the pupil in order to acquaint onesself with his interests and ambitions and to use them to broaden and deepen his interest in other worthwhile knowledge or things. No opportunity should be lost to challenge the best that is in him. No opportunity should be lost to

make him realize that in you he has a true friend and wise counselor, one who will not betray his confidence and one to whom he may go for help not only in mathematics but perhaps in other fields as well.

But you may say that we have forgotten that you are a teacher of mathematics and that you are hired to teach the subject. But I have not forgotten. I have neither said nor implied that you were not to teach mathematics. This was taken for granted. Not only that, but you must do a far more effective piece of work than has been done in the past by many teachers of the subject. At the end of the year your pupils should know more algebra or arithmetic or geometry, and be better able to apply them than your last year pupils. In addition, they should realize that there are many traits and abilities which may be developed through mathematics study, which will be, no doubt, of more value to them than the knowledge of mathematics itself.

Let me emphasize the thought again that you must teach mathematics well. Few, if any, of the indirect values that may be attained from the study of mathematics may be secured by a pupil until he has developed a thorough mastery of the subject. There can be no transfer of knowledge, habits, or skills from mathematics to other activities unless they be first formed in the field of mathematics. Then through masterful teaching you will be able to secure these valuable transfers. Hence, let us all teach our subjects better than we have ever taught it before. Let us have enthusiasm, for our subject, for our pupils, for our school, and for our community. Let us know our subject way beyond where we expect to take our pupils in order that we may at times point the way to distant mountain peaks to be found in more advanced courses. Let us see if we cannot inspire our pupils to want to know mathematics and to acquire those values which may be attained from its study.

This is the challenge. But in accepting it, let us remember that the complete accomplishment of the things set forth above have never yet been reached by a mathematics teacher. If we do not recognize this and the difficulty of the task here set before us, we are quite apt to recognize our shortcomings and despair of ever accomplishing anything worth while. Let us ever be optimistic, cheerful, and have a sense of humor.

We should remember that it takes all kinds of people to make a world and some of us are convinced that all kinds are here. We should also remember that these days the pupils who come to our

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The Latin Column

Conducted by BENSON W. DAVIS

RECENT BOOKS IN THE LATIN FIELD

THE FOLLOWING list of recent books in the Latin field is not intended to be exhaustive or all-inclusive. Books of such a nature as to be of interest primarily to graduate students engaged in research have been omitted. This bibliography is a partial list of the newer type texts in Latin, together with the titles of some other books of general interest to the teacher and to the student of Latin. The following publications are the sources from which this list was made: *The Classical Journal,* Oct.-June, 1934-1935. Oct.-June, 1935-1936; *Latin Notes,* 1935-1936; *The Cumulative Book Index,* 1934-1935, and current issues through June, 1936.

Atkinson, G. T. *Simple Stories Told in Classical Latin.* New York. E. P. Dutton Co. 1935.

Barnard, A. S. C. *First Latin Course. London.* George Bell and Sons. 1934-35.

Baty, Charles W., *Third Year Latin Reader.* New York. Oxford Univ. Press. 1935.

Bentley, Phyllis. *Freedom Farewell!* (An historical novel based upon the life of Julius Caesar). New York. Macmillan Co. 1936.

Berry, Lillian G. *Proficiency Tests and Workbook for Second Year Latin.* New York. Silver, Burdett and Co. 1934.

Brooks, Alice R. *Readings for French, Latin, German.* A bibliography of Materials for Atmosphere and Background for Pupils in Foreign Language Courses. New York. H. W. Wilson. 1935.

Carr, Wilbert L., Hadsits, George D., and Wedeck, Harry E. *The Living Language.* A Second Latin Book. Boston. D. C. Heath and Co. 1934.

Colby, John K. *Reading Latin.* A Companion to Translation. New York. College Entrance Book Co. 1934.

Cornforth, John W. and Edington, G. E. *First Latin Exercise Book.* Sydney, Australia. Angus and Robertson. 1934.

Daniels, E. D., Chester, Viola S., and Jenks, Paul R. *Latin Three Years.* New York. Globe Book Co. 1935.

Denoon, Ernest I., and Baxter, William A. *Senior Latin Prose Composition.* Edinburgh. Oliver Boyd. 1935.

Dunham, F. S. *Second Year Latin,* revised edition. Philadelphia. John C. Winston Co. 1934.

Ford, Celia. *Second Latin Book.* New Series. New York. Henry Holt and Co. 1935.

Forsman, G. C. *Latin Practice Book.* First-Second Years. St. Louis. Webster Publishing Co. 1935.

Herzberg, M. J. *Classical Myths*. New York. Allyn and Bacon. 1935.

Hettich, Ernest L., and Maitland, A. G. C. *Latin Fundamentals*. Revised edition. New York. Prentice-Hall. 1934.

Hitchen, E. *Pax Romana*. A First Latin Reader. Exeter, England. A. Wheaton and Co. 1934.

Hitchen, E. *Aditus*. A Second Latin Reader. Exeter, England. A. Wheaton and Co. 1935.

Hutchinson, M. E. *Outline and Bibliography of a Latin Teacher's Course*. Edwards Bros. 1935.

Irwin-Carruthers, G. *Latin for Schools*. London. University Tutorial Press. 1935.

Jones, Wren, and McDuffee, Walter V. *A First Book in Latin*. New York. D. Appleton Co. 1933.

Lightfoot, G. C. *Progressive Latin Exercises*. London. Rivington's. 1934.

Mackey, I. M. *Introduction to Cicero*. London. George G. Harrap and Co. 1934.

Marcy, William Nichols. *Complete Latin Course*. London. Andrew Melrose. 1935.

Messenger, Wilfrida J. *My Progress Book in Latin*. Columbus, Ohio. American Education Press. 1935.

Morton, Thomas S. *Easy Exercises in Latin Prose*. London. Macmillan Co. 1935.

Moxon, T. *The Story of Rome from Latin Authors*. New York. E. P. Dutton Co. 1935.

Nicholson, J. *Handy First Year Latin Book*. London. Blackie and Son. 1935.

Pratt, Marion. *First Year Latin*. Boston. Houghton Mifflin. 1934.

Pratt, Marion, Allen, B. M., and Wood, C. L. *Second Year Latin*. Boston. Houghton Mifflin. 1935.

Richards, G. C. *Cicero*. (Biography). New York. Houghton Mifflin. 1935.

Rouse, W. H. D. *Latin Stories for Reading or Telling*. Oxford. Basil Blackwell. 1935.

Scott, Harry Fletcher, and Horn, Annabel. *Latin Book One*. Scott Foresman and Co. 1936.

Siedler, Charles W. *Guide to Cicero*. New York. Oxford Book Co. 1935.

Smith's First Year Latin. Revised by Harold G. Thompson. Allyn and Bacon. 1933.

Stuckey, Howard S. *Brief Introduction to Caesar*. Exeter, New Hampshire. 1934.

Ullman, B. L., and Henry, Norman E. *New Elementary Latin*. Revised edition. New York. Macmillan. 1936.

Ullman, B. L., and Henry, Norman E. *New Second Latin Book*. New York. Macmillan. 1936.

Vincent, C. J. *First Latin Reader*. New York. Oxford Book Co. 1936.

Winspear, A. D. *Readings in Latin Prose and Verse*. Minneapolis. Burgess Publishing Co. 1935.

Wright, F. A., and Sinclair, Thos. A. *History of Later Latin Literature*. London. George Routledge and Sons. 1935.

FUNCTIONS OF SECONDARY EDUCATION DIVISIONS OF STATE DEPARTMENTS OF EDUCATION

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ary was from $1,200.00 to $1,500.00 it was usually supplemented by additional salary from another division.

While the data collected on the functions of secondary school divisions of State Departments of Education show a higher degree of similarity of purpose than the majority of divisions there is still a sufficient diversity to indicate a lack of agreement to the extent that one must reach the conclusion that no definitely fixed point of view exists regarding secondary education among the various states. Furthermore it emphasizes the fact that each state is the responsible agent for the education of the children of secondary school age without regard for other states. It is not argued here that all states should be made to conform rigidly to a pattern to be imposed by some national authority; rather, it is suggested that if the purposes of secondary education are established by some form of the social functions procedure, and that the secondary school divisions be organized upon such an analysis, much more agreement will be in evidence among the various states. If such were the case it is certain that some of the functions that are now performed would be eliminated and many of the remaining ones would be performed for an entirely different purpose. Such an analysis would also indicate a more intimate relationship between the elementary level and the secondary level and between the secondary level and the college level of education.

THE SEA, A MINE

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absorbed from the water which passes out of the tower into flumes and thence into the Cape Fear River.

The bromine is removed from the air by passing the mixture through a soda ash solution forming sodium bromide and bromate.

$$3Na_2CO_3 + 3Br \longrightarrow 5NaBr + NaBrO_3 + 3CO_2.$$

The air is expelled when it has passed through all nine chambers of the absorption towers. The bromide and bromate is stored in tanks until made into ethylene dibromide in another portion of the plant.

The plant is doing everything that was expected of it with an efficiency of about ninety per cent.

At the present all of the bromine taken from the sea is used in the gasoline industry, but in the future sea-mined bromine may find its way into every industry in which bromine is used.

United States statistics show that 35,344,290 pounds of bromine valued at $3,227,425 were used in this country during the year 1934,

which was an increase of fifty-one per cent in quantity and fifty-eight per cent in value over that used in 1933. The production was also about seven and one-half times as much in 1934 as in 1924.

There are quite a few more elements present in dilute proportions in sea water; for instance, sodium, silver, iodine, lead, chlorine, lithium, rubidium, phosphorus, strontium, tin, potassium, vanadium, cobalt, nickel, iron, magnesium, and radium. As it may be seen, the majority of these elements may be obtained elsewhere more easily than from the sea, mainly because of the small per cent found in sea water.

However, in the future, the ocean may be the most valuable mine that there has ever been. It is but awaiting chemists to find the methods and to take its wealth.

THE PHYSICAL EDUCATION COLUMN

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the development of an interesting program that will eliminate the resentment to compulsory work in calisthenic and "setting-up" exercises. To show that the freshman course is not to be regarded as a "crip," the "flunking" of 10 per cent of last year's matriculates in the course stands as mute evidence.

Coöperating with the Department of Physical Education faculty, the various phases of its work, in addition to the Athletic Association, the Infirmary, and the Gymnasium, are the Medical School, the Department of Sociology, and other university divisions. The whole program looks toward the organization of a single division of athletics that will combine eventually the work in physical and health education with intercollegiate and intramural athletics. Such an objective was outlined in 1922 and has been held in prospect by Dean A. W. Hobbs, Robert A. Fetzer, and other athletic and university administrators since that time. Such a type of organization is in operation at Ohio State, Minnesota, Michigan, Penn State, Columbia, and other leading institutions.

A by-product of the new development in physical education that will interest alumni is that ably trained teacher-coaches will be going out of Chapel Hill into the various high schools of the state after 1936-37. Also prospective students who wish to become athletic coaches and administrators will be attracted to Chapel Hill by the offerings in teacher training for physical education. Naturally intercollegiate athletics will afford a strong stimulus to the new work as well as receive benefits in return.

THE MATHEMATICS COLUMN

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class rooms are a pretty fair cross section of this world. We must recognize, therefore, that it is impossible to make a first-class mathematician of every pupil whom we teach. Nor can we make of every boy or girl an academic scholar. We all recognize the fallacy of that classic statement that "all men are created equal." Let us recognize the fact, then, that we will have those that simply cannot reach the heights that are easily attainable by other members of our classes. Recognizing this fact, however, let us try as best we can to minister to the individual needs of each pupil, endeavoring to get him to use his abilities and powers to somewhere near the maximum. Let us not fall into the error made by so many teachers, which is expressed aptly by the lines:

"The teacher cares for the laggard;
God alone cares for the bright."

Let us take each boy or girl who comes to us and having determined the level of his attainment strive throughout the year, each successive day to stimulate and help each to rise to a higher plane than the one we found him on the day before. Let us remember that we are building temples no less divine than a child's immortal soul.

America expects every teacher to do his duty. Let us take our places and not be found wanting.

BOOK REVIEWS

Incentives to Composition. PHYLLIS ROBBINS. (Harvard Studies in Education. Vol. 27.) Harvard University Press. 1936. Pp. xv + 515. $2.75.

The Writing of Modern Prose. VIRGINIA CHASE PERKINS. Henry Holt and Company. 1936. Pp. 313 + lxxvi. $1.20.

Reading for Understanding. MABEL A. BESSEY AND ISABELLE P. COFFIN. D. Appleton-Century Company. 1936. Pp. xi + 325. $1.00.

These three English books present interesting contrasts. Each deals with the development of the power of expression, but each from a different standpoint.

The first is a masterly attempt to encourage the writing of really good articles by advanced high school students. To these the approach is made by the avenue of creating a real knowledge and interest in possible theme topics. Through well-written, brief essays the student is led to see the hu-

man interest that lies behind each of the various subjects which the author has chosen to make up the contents of the book, and is encouraged to gain such mastery of some further phases of these subjects that he can, through the exercise of his imagination, produce word pictures that will be appropriate in background and interesting from the human viewpoint.

The author divides her book into two types of "setting-up exercises," those to widen the range of interests of students, and those to develop the sense of beauty, or to cultivate taste and appreciation. The list of topics is in both sets surprisingly broad, and the supporting references and bibliographies remarkably varied. Interesting tests on the powers of observation, imagination, and reflection, largely compilations to be sure, complete the volume. As the title implies, little attention is devoted to the techniques of writing; the book seeks only to stimulate and direct toward composition of high value.

The other two books are concerned with techniques, but in entirely different ways. That by Bessey and Coffin deals with achieving *clarity* above all things, both in reading and in reëxpressing thought. Ability to understand fully and to write with exactness the ordinary English necessary in discussing such diverse matters as sports, civics, science, the fine arts, health, home economics, and mathematics is the goal sought. The method is largely one of paragraph-analysis and restatement, along with exercises on word-meanings.

The book by Perkins, on the other hand, apparently assumes this clear mastery of so-called work-reading and work-writing, and devotes its pages almost entirely to developing *elegance* in the four major types of composition. With the exception of the instruction that it gives in organizing written work, and of certain portions of the section on exposition, it concerns itself with rhetorical devices intended to appeal to the emotions of the reader. It is natural that much of the space of this volume should be taken up with illustrative extracts, some of them rather lengthy, chosen in accord with the purposes described.

The appendices contain an extensive word list (derivation, meaning, words ordinarily associated), notes on authors, suggested assignments, notes to teachers.

C. E. P.

Descriptive Chemistry. SHERMAN R. WILSON. Henry Holt and Company. 1936. vii + 312 pp. $1.20.

A well-illustrated book, intended primarily for use in a half-year lecture-demonstration course for students going no farther than the high school. It is purely informational, at times interestingly so, especially in its treatment of "drugs, poisons, and cosmetics," and of some industrial processes. Yet in his effort to simplify the subject to bring it within the comprehension of pupils of mediocre ability, the author, who, by the way, is described as head of an "*exact science*" department, seems to the reviewer to have gone too far. For although "there are no valences . . . to be taught, . . . no equations to balance," neither is there present that minimum of chemical theory whereby alone a pupil can discern any organization of chemistry as a subject or find guidance in its application. Surely it is always harder to memorize a multitude of apparently un-

related facts than it is to learn them with reference to a series of definite coordinating principles!

To those of us who feel that science, even for weaker students, should seek to stimulate problem-raising and give practice in problem-solving, the prefatory statement that there are "no problems to be solved" sounds strangely discordant. The author points out alluringly that this omission leaves the teacher free; but he fails to stress the teacher's added responsibility to provide such problem work in the face of the omission. Perhaps, however, author and reviewer merely disagree on this fundamental point of teaching philosophy.

C. E. P.

New Elementary Latin. (Revised edition.) B. L. Ullman and Norman E. Henry. The Macmillan Co. New York. 1936. xvii + 457 pages. List price, $1.40.

This text is essentially the same as the earlier versions by the same authors (1923, 1925, 1929). Some changes in the reading selections, the addition of a few new readings, and sixty-five new illustrations are the new features of the book. The many illustrations, together with the new cover design, a Roman galley, are quite attractive, and should appeal to the imagination of students.

B. W. D.

New Second Latin Book. B. L. Ullman and Norman E. Henry. xv + 537 pages.

With the exception of some minor changes in arrangement of material, and the addition of certain selections from authors not included in the previous issue of *Second Latin Book,* there is little difference between the two. The physical appearance and features of the book are commendable. There is little need, however, to include in a second year Latin text selections from a poet; the materials from Ovid in this text are probably beyond the ability and comprehension of second year Latin students.

B. W. D.

College Entrance Requirements in English: Their Effects on the High Schools. An Historical Survey. Edna Hays. Teachers Coll. Contrib. to Educ. No. 675. 1936. 141 pp.

This study traces the development of the objectives of English teaching in the public high schools of the United States, especially from 1870 through 1935, with a view to determining, without bias so far as may be, what have been the outstanding effects of college entrance requirements. Its concluding paragraph summarizes briefly, as follows: "The organized course in English owes its place and time in the high school curriculum to the college entrance requirements. . . . The National Conference on Uniform Entrance Requirements in English, during the first decade of the twentieth century, organized the course and directed it toward college. The National Joint Committee on Reorganization of English in Secondary Schools reorganized that course and directed it toward life. Today the high school accepts the social aims formu-

lated by the Committee of Thirty. In theory it commits itself to the ideal of attaining socially useful ends; in practice it, more often than not, follows the traditional methods that developed in response to the college entrance requirements."

C. E. P.

Our World of Living Things. ELWOOD D. HEISS, ELLSWORTH S. OBOURN, AND J. GORDON MANZER. Webster Publishing Company. St. Louis. 1936. Book I, 172 pp, Book II, 171 pp. Paper. Each $.39 net.

As in the general science volume of the same series, the plan of the authors is to "combine text, laboratory manual, workbook, and notebook into a complete unified course so that no other books are needed." At the same time the student is continually urged to extend his reading to other texts and reference books, appropriate lists of which are given in connection with each topic.

The work is ably written, organized around fundamental principles and in well-selected units. Special use is made of the problem-solving method, and at the beginning, particular attention is paid to the formation of right habits of approach to book study. The helps to learning seem adequate, and the reading passages expertly chosen to give a comprehensive and balanced understanding of the subject. Each book is intended to guide the work of one semester.

Taken together, these books should constitute an excellent and inexpensive type of directive material around which to center a high school biology course.

C. E. P.

Survey of High School Mathematics. JOSEPH A. NYLERG. American Book Co. 400 + xix pp. 1935.

This book was written for those ninth grade pupils who do not plan to go to college and who do not care for a systematic knowledge of those phases of mathematics usually taught in high school. The material of the book is largely arithmetic and algebra although it contains some intuitive geometry, demonstrative geometry and trigonometry. It also contains chapters on logarithms and the slide rule.

One of the features of the book is the provision which it makes for the motivation of learning. This is accomplished through the presentation of the practical application of mathematics to many phases of modern life and through numerous cuts and diagrams. The interesting way in which the author presents the material to the pupil also furthers this end. The most noteworthy feature of the whole book, however, is the interesting bits of mathematics history which are found at intervals throughout the book. One whole chapter is devoted to the history of number. This chapter probably is the most interesting one in the book.

From the standpoint of typography the book is excellent. It will no doubt meet a wide-spread need.

H. F. M.

Practical Algebra. CLIFFORD B. UPTON. American Book Co. 488 + vii pp. 1936.

This book is designed as a textbook for beginners. The subject is approached through the use of the formula. The author has evidently used great care to bridge the gap between the traditional arithmetic and algebra courses and to develop the subject by leading very gradually from the very easy to the more difficult phases of algebra.

The book is pedagogically arranged. The traditional order of material has been changed by placing factoring, fractions and fractional equations after simultaneous equations.

One of the features of this book is the devices found therein for motivation. Among these devices are many meaningful pictures, interesting and practical problems, and understandable explanations. The author has frequently pointed out to the pupil the application of algebra to various fields of human endeavor.

There is no doubt more material than can be covered by even an excellent class in one year. However, the author has made explicit suggestions that will enable the teacher to reduce the amount of material so that it may be covered in one year. Provision is also made for individual differences by a system of starring problems that are more difficult and by indicating those topics that should be considered optional.

The diagnostic tests and remedial work offered in this book should be valuable to both teacher and pupil.

The book is neat and attractive, well arranged, well bound, and has excellent print.

H. F. M.

Mathematics at Work. GEORGE H. VAN TUYLE. American Book Company. 454 + xi pp. 1935.

This book consists of two parts. Part I is devoted to a type of "consumers" arithmetic, such as family budgets, writing checks, bank balances, multiplication and division of decimals, freight rates, et cetera.

Part II treats simple algebraic equations, addition, subtraction, multiplication, and division of directed numbers and very simple algebraic polynomials. The rest of this part is devoted to such phases of arithmetic as ratio and proportion, percentage, discounts, profit and loss, interest, taxes and insurance.

The book is largely arithmetic of a practical type and is quite elementary in nature.

H. F. M.

Educational, Psychology, and Personality Tests of 1933, 1934, and 1935. OSCAR K. BUROS. (Studies in Education, No. 9. 83 pp.) Rutgers University Bulletin. Vol. XIII, No. 1. July, 1936.

The School of Education at Rutgers University plans to publish an annual bibliography of commercially available tests, with data as to price, working time, groups for which each is adapted, number of forms, etc. The present issue is really the second number in the series; but as the earlier issue, covering

1933 and 1934, is now out of print, its listings have been combined with those for 1935, cumulatively.

Certain more limited types, such as tests for city testing programs and tests to go with special textbooks, have thus far been generally excluded from the listings, but apparently some expansion to include them in subsequent issues is contemplated.

C. E. P.

French Civilization. ERWARD I. AMATEAU. Globe Book Co. 1936. 63 pp.

A summary of French civilization in 52 pages, with an additional 10 pages of tests on this material. The author has attempted to give in this very limited space an encyclopaedic account of French civilization. Of course only the briefest of statements could be presented. The style is consequently limited to short sentences, at times resulting in an almost infantile succession of declarative statements. There are many bare facts that can be of use and interest. There are good illustrations.

H. G.

France, Crossroads of Europe. PECK AND MÉRAS. Harper & Brothers. 1936. 269 pp. Exercises, pp. 273-312.

This is a very readable book about France and the French people. It will give the pupil a fairly good general knowledge of the "cultural" facts that are being so much stressed at present.

The material is interesting and well arranged. The cover has an attractive map of France. The type is excellent. For teachers who want this sort of material in a reasonably brief compass the book is highly recommended.

H. G.

French Reading and Practice. CÉLIÈRES AND MÉRAS. Globe Book Co. 1936. 146 pp.

"A reader for second or third year high school, or first or second year college classes." There are 28 reading selections, consisting of animal stories, childhood episodes, historical narratives, accounts of great men, tales of adventure and heroism, poetry of universal appeal. The selections are all short, for the most part about two pages in length, rarely as much as three pages. The material is chosen usually from the best French authors.

The space taken up by the exercises is often greater than that given to the selection. The exercises are varied, and often ingenious. The charm of reading the selections could easily be offset by doing all of the exercises! It would have been better to have filled more space with further selections and made the exercises shorter.

H. G.

Quelques Nouvelles Histoires. HÉLÈNE GOBEL. Houghton, Mifflin Co.. 1936. 107 pp. $.88.

This is a collection of eighteen simple short stories, arranged in order of difficulty. The style is very simple, and the vocabulary limited. For younger children the earlier stories would be very interesting. Again we find numerous exercises, at times occupying more space than the text. For rather rapid reading this book should do very well.

H. G.

Quinito, Explorador del Mundo. L. A. WILKINS. Henry Holt & Co. 1935. 323 pp.

This is the story of two Spanish boys who travel around Spain. It is written in simple Spanish, with the purpose of giving a rapid reading knowledge. It is for junior or senior high school pupils. The adventures of the boys are live and should interest the high school pupil. The vocabulary is limited to 917 words, which should give the pupil a ready comprehension of the material.

For the purpose of giving the pupil a reasonably good insight into Spanish life, with a limited vocabulary and in a fairly limited space, and at an early stage in the course, this is a good book.

H. G.

Bunte Gesellschaft. FULDA. Edited by A. Gartner. D. C. Heath & Co. 1936. $.48.

This collection of three short stories by Fulda has first of all its low price to recommend it. More paper-bound books should be in use in our schools. It would reduce the cost materially.

Another outstanding feature is the "Visible Vocabulary." On the page facing the text is the vocabulary for that page. This makes for ease of study on the part of the student. Whether this will become a universal practice or not will depend much on how the scheme will work out over a period of time. It looks good at first glance at any rate.

The stories in this collection are well chosen.

H. G.

Science Interests. F. W. FITZPATRICK. Bureau of Publications, Teachers College, Columbia University. 1936. 72 pp. $.80.

Pointing out that although "interests" of pupils have been recommended as a criterion of what should be included in courses of study, educators have not furnished adequate directions as to how such "interests" are to be scientifically determined, the author reports the results of a series of ingenious studies which he has made to determine the value of one commonly employed method, namely that of collecting and tabulating pupil testimony. In these studies he tested groups ranging from fifth grade to college graduates majoring in science. His general finding is that such testimony, at all levels, is so "unstable, inconsistent, ill-considered" as to be "unreliable as the basis for any scientific conclusions."

C. E. P.

Centralizing Tendencies in the Administration of Public Education: A Study of Legislation for Schools in North Carolina, Maryland, and New York Since 1900. GEORGE D. STRAYER, JR. New York: Bureau of Publications, Teachers College, Columbia University, 1934. Pp. vi + 123.

This study is based upon an intensive examination of educational legislation since 1900 in the three states named. The author finds that centralizing tendencies in North Carolina have been closely related to state educational support, based on taxable values and the cost of maintaining a minimum school term and program. Centralization of public educational administration in Maryland has come about through supervision rather than direct administrative control; the county unit has served well in that state. The author finds that "New York State has been handicapped in its attempt to provide for equality of educational support by the large number and many types of local districts which have prevailed throughout the state."

Centralization appears in the compulsory attendance laws of the three states studied. Such legislation was introduced in New York State in 1853, in Maryland in 1902, and in North Carolina in 1907. Since the introduction of compulsory attendance legislation these states have witnessed a corresponding increase in state supervision of compulsory attendance. Likewise, the length of the school term has been controlled by central authority. The study points out that North Carolina has gone to the extreme of complete state support of a minimum (eight months') school term, while Maryland and New York have continued provision for state aid with many changes which more nearly provide "equality of educational opportunity and support." The study shows that only in the case of North Carolina has great control accompanied state aid, "and since North Carolina has only recently taken this step it is not yet possible to tell how public education will be affected."

Those on the ground, however, have during the past three or four years been made aware of the effect of high centralization in public education in North Carolina. True, complete support of an eight months' school term by the state provides a basis on which a sound public educational system may be constructed; but the rather sudden shift to high centralization and the abolition of all local school taxes in 1933 shocked public educational interests in North Carolina where educational progress in the past was made largely by local initiative and local responsibility.

Strayer has made a very careful study and a definite contribution to the principles of public educational administration. Among the pertinent conclusions reached by this study the following are of especial interest to North Carolina:

The greatest educational progress in local communities and in the state is dependent upon freedom to experiment locally in the organization of schools and classes, in the development of courses of study and curricula, in methods of teaching, and in the provision of new services not commonly associated with classroom procedure.

The state should control certain minimum provisions with regard to financial support, qualifications of personnel, school organization, and physical equipment. These state controls aid in the realization of the purpose of the state through public education.

Centralizing tendencies should be encouraged when they attempt to insure adequate financial support, competent personnel, necessary physical equipment,

and essential school organization. However, state control over these externa should extend only to certain minimum requirements necessary for the operation of a satisfactory minimum program of education. The localities should be encouraged to exceed the state requirements.

The acceptance and utilization of the principles discussed above by administrators and legislators may be expected to bring about a clarification of many of the legislative problems which vex them. Thus, it may also be expected that these principles will contribute to the development of better state programs of education.

E. W. K.

Mathematics in Life. SCHORLING and CLARK. World Book Co. Unit A, 48 pages, price 24c; Unit B, 64 pages, price 28c; Unit C, 48 pages, price 24c; Unit D, 64 pages, price 28c.

This series of monographs was written to make available a type of mathematic material for teachers to use with pupils who are unable to profit by the traditional courses in mathematics. The authors have taken great pains to choose material that would grip the interest and come within the ability of such pupils. The very gradual increase in difficulty and the great care taken to build up correct concepts are outstanding. The explanations are unusually good.

The titles of these respective monographs are as follows: Unit A, Measurement in Modern Life and in the Long Ago; Unit B, Constructions, Using Geometry in Practical Drawing; Unit C, Drawing to Scale, Some Everyday Uses of Mathematics; Unit D, Per Cents, Their Meaning and Use.

The material presented in each of these units is true to its title and is presented from the standpoint of its practical use in everyday life. Because of the splendid illustrations, cuts, diagrams, and explanations found readily available here, all teachers who teach these topics should have copies of these monographs. Other units on similar topics will soon follow.

H. F. MUNCH.

A First Course in Algebra. STONE and MALLORY. Benj. H. Sanborn & Company, 1936. Pp. vii + 510.

This book is one of the most recently published elementary algebra texts. It is not a revision but is new in every respect. The book is particularly strong in the number, arrangement, and excellence of its drill exercises.

One of the most noticeable features of the book is the use made of the history of mathematics. There are cuts of a number of the great mathematicians, each accompanied by a short biography. There are also other bits of the history of mathematics, such as the origin of the name "algebra" and the first use of negative numbers.

The book is divided into units. At the end of each unit is a "First Test" covering the unit. Following this test is found carefully selected remedial work. This remedial work is so organized that the pupil may readily find the material upon which he needs further practice. Then comes a second test, followed by a comprehensive review and a test on all preceding work.

The authors have taken great care to aid the pupil in catching the function concept. This is done through the study of the graph and through the study of the relationship existing between the various letters in a formula. The

pupil will find in this book motivating material for his study of algebra as well as constructive suggestions on how to study algebra.

The book is neat, well printed, well organized, and teachable.

H. F. MUNCH.

First Studies in Business with Correlated Arithmetic. BEIGHEY and SPANABEL. Ginn & Company. 522 pp. Price, $1.11 net.

This book is prepared for use in high schools. It is divided into five parts. The titles of these parts are as follows: Part I, Occupational Information and Problems; Part II, Consumer Information and Problems; Part III, Financial Information and Problems; Part IV, Production Information and Problems; and Part V, Marketing Information and Problems. These various parts are divided into chapters. Each chapter consists of a brief but thorough discussion of some phase of business, followed by a number of pages of correlated arithmetic and a review with topics for discussion or reports by the pupils.

Some of the features of the book are the many typical forms used in the business world today, the cuts or photographs of business houses, machines, and other equipment used in offices or manufacturng plants, and the special attention given to the vocabulary of business.

The book is well written, and the material is well organized. It should receive a ready response from the consuming public.

H. F. MUNCH.

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